



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,105	08/25/2003	Tony M. Brewer	10970696-3	7372

7590

05/05/2005

HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P. O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER

PEIKARI, BEHZAD

ART UNIT

PAPER NUMBER

2189

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/650,105

Applicant(s)

BREWER, TONY M.

Examiner

B. James Peikari

Art Unit

2189

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. The previous objection to the specification regarding the priority data in the first line of the specification is withdrawn due to the amendment filed on March 15, 2005.

2. The specification is objected to for the following reasons:

The title recites "virtual memory translation". Since the memories themselves cannot be translated, the language should be rewritten, such as "virtual memory address translation".

Applicant's comments on page 6 of the remarks submitted with the amendment filed on March 15, 2005 are not deemed convincing for the reasons provided below in Section 4 of this Office action.

3. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

4. Claims 1, 5 and 6 are objected to since they recite "virtual memory translation".

Since the memories themselves cannot be translated, the language should be rewritten, such as "virtual address translation" or "virtual page address translation" or even "virtual memory address translation".

On pages 6 and 7 of the remarks filed with the amendment of March 15, 2005, applicant first argues that applicant is may be his own lexicographer, to which the examiner agrees. However, applicant then goes on to argue that since "virtual memory translation" is not a word, but a phrase, applicant should not be held to the standard set forth regarding repugnance to its usual meaning. The examiner does not agree. Nevertheless, that is not the issue.

The issue is "virtual memory" and whether it can be translated. As virtual memory is used in the art, it cannot be translated, although the addresses which define the boundaries of virtual memory can be translated: by word, by line, by block, by page (as described in applicant's citation of page 5, lines 10-26) or even *in toto*. In other words:

- (a) Virtual memory cannot be translated.
- (b) Virtual memory addresses can be translated.

The distinction may seem to be one of syntax only, but that is not the case. Virtual memory is a logical construct that is defined by its addresses. Thus, the question is not whether applicant should be allowed to be his own lexicographer but whether the idea of translating "virtual memory" makes sense.

In anticipation of any request for an affidavit, the examiner is providing herewith the standard definitions of "virtual memory" set forth in the Microsoft Press Computer Dictionary, 2<sup>nd</sup> ed. and in the Authoritative Dictionary of IEEE Standard Terms, 7<sup>th</sup> ed.

5. The objection to claims 2 and 5 is hereby withdrawn. The examiner maintains that the scope of the status information is already predefined in claims 1 and 5, however, no objection should have been made.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 1, 4 and 12 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Wu et al., 5,906,001.

With regard to claim 1, Wu et al. teach the claimed invention as background art with a method for controlling virtual memory translation (*i.e., address translation, note*

Art Unit: 2189

*the use of a translation lookaside buffer throughout Wu et al.) during data movement operations (i.e., data transfers) enabled in a hardware environment, comprising the steps of:*

*monitoring, as a hardware operation, for an occurrence of a translation lookaside buffer (TLB) purge (note column 2, lines 33-54, which describe a less common way of monitoring using snooping as well as a more common way of monitoring using propagation of a shutdown operation) during setup and execution of a data movement operation from virtual memory (note that all transfers and other programming instructions are halted from execution), and*

*upon detection of a TLB purge (i.e., invalidation a TLB entry, note column 2, lines 10-29) prior to completion of the data movement operation, aborting the data movement operation (note the use of the "INT" instruction to interrupt and halt all microprocessor operations, column 2, lines 50-59 and lines 64 et seq.) pending reestablishment of accurate virtual-memory-to-physical-memory mapping (note column 2, lines 60-63).*

With regard to claim 4 and the data movement operation being a data copying operation, "copying" is a generic term of art that is used for both reading and writing. Thus, the scope of this claim encompasses all data transfers and thus would have been taught by the language "executing programming instructions" in column 2 of Wu et al.

With regard to claim 12, column 1, line 60, to column 2, line 29, describes how the TLB purge is triggered by a change ("due to a modification by an operating system or software routine") in the memory mapping.

### ***Double Patenting***

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1-17 are rejected under the judicially created doctrine of double patenting over claims 1-10 of U. S. Patent No. 6,668,314 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

10. Claims 6-11 and 15-17 are rejected under the judicially created doctrine of double patenting over claims 12-16 of U. S. Patent No. 5,966,733 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

### ***Response to Amendment***

11. With regard to applicant's remarks concerning the rejection under 35 U.S.C. 102(e) as being clearly anticipated by Wu et al., 5,906,001, all of the arguments hinge on claim 1 and the claimed feature of "monitoring, as a hardware operation, for an occurrence of a translation lookaside buffer (TLB) purge".

Applicant argues that Wu et al. teaches such monitoring as a software-based operation.

The examiner assumes that applicant is trying to say that Wu et al. teaches such monitoring as a software-based operation while the present invention describes it as a hardware-based operation, and thus the two are not the same.



However, it is noted that:

(a) *Wu et al. teaches this operation being implemented in software and in hardware.* Applicant has already noted the software citations. The hardware includes the elements that run the software, the buses or lines upon which the detection is occurring and, of course, the TLB upon which any purge occurs.

(b) *Applicant's operation is also implemented in both software and hardware.* The hardware implementation has already been included in applicant's claim. The software basis is, however, admitted by the language which falls short of "exclusively" on page 1 of the specification "The invention is operable in an environment in which data movement is performed *largely* by hardware" (emphasis added) and on page 11 of the specification "Under the claimed invention, data movements operations are enabled *almost* exclusively using hardware" (emphasis added). In fact, software usage is admitted through the entirety of page 18, for example.

It is clear that the applicant's operations are not *entirely* or *exclusively* hardware based, thus rendering moot any arguments to this extent. Should applicant attempt to amend the claims to include such language, the issue of enablement would arise based on the above-cited citations from the specification.

#### ***Allowable Subject Matter***

12. It is clear that there are specific actions TLB purge monitoring that are actually performed in hardware in ways that are not shown in the cited references, however, the

claims do not include such distinctions. The claims should specify exactly what is and what is not performed by hardware, with regard to the specific steps of the TLB purge monitoring.

### ***Conclusion***

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Peikari whose telephone number is (571) 272-4185. The examiner is generally available between 7:00 am and 7:30 pm, EST, Monday through Wednesday, and between 5:30 am and 4:00 pm on Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim, can be reached at (571) 272-4182.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 central hotline at (571) 272-2100.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 746-7239 (Official communications)

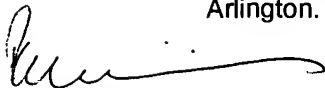
or:

(703) 746-7240 (for Informal or Draft communications)

or:

(703) 746-7238 (for After-Final communications)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).



B. James Peikari  
Primary Examiner  
Art Unit 2186

5/2/05